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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,182	09/19/2001	Shinya Takahashi	214032US2PCT	1622

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EXAMINER	
JAMAL, ALEXANDER	

ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/926,182	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	Alexander Jamal	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-12,14-18 and 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-12,14-18 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10-20-2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3-8-2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Based upon the submitted amendment, the examiner withdraws objections to the drawings.

Claim Rejections - 35 USC §.102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1,2-4,7,9,10,14-18,22,26** rejected under 35 U.S.C. 102(b) as being anticipated by Umemoto et al. (5636323).

As per **claim 1,** Umemoto discloses a voice communication device with a control CPU that outputs a speaker amplification value that corresponds to a speaker volume that is adjustable with volume control unit 40 and console 43 (Col 5 lines 35-61, Fig. 2). The device further comprises an echo processing unit 30 that amplifies a received, demodulated, decoded signal (Col 3 lines 18-60) in order to produce an echo canceling signal to cancel the echo by mixing the signal with a transmitting input signal from microphone 14. The device further comprises output amplifier (blocks 36,35). The

output amplifier and echo cancellation blocks are functional units that may be contained within a single DSP (Col 5 lines 23-34). Volume control unit 40 may read volume levels (gain values) from a ROM and supply them to amplifier (blocks 35,36) (Col 7 line 62-Col 8 line 5). The gain values applied to the amplifier are included in the signal RSS (RSS=RS+gain value from unit 40). The RSS singal (including the gain value) is passed along to adaptive filter (which is just a functional unit within the same DSP as the amplifier).

As per **claim 16,** claim rejected for same reasons as the rejection of claim 1. The device (Fig. 2) disclosed by Umemoto comprises a processor that inherently comprises ports for a received input signal, a speaker amplification value input signal, a transmitting input signal, for the purpose of being able to receive the signals as per Fig. 2. The echo produced by the speaker 13 is canceled by an echo signal in echo canceller 30. When the volume of the received input signal is above a threshold (according to the speaker amplification value), the limiter 35 reduces the input received signal and also reduces the amplitude of the echo canceling signal (the limiter is located before the input to the coefficient circuit 33).

As per **claim 2,** echo canceller 30 (Fig. 2) calculates a pseudo echo (echo canceling signal) according to the amplified input signal and a set of coefficients (Col 1 lines 35-56) based upon the echo path between the speaker and microphone. When the volume of the received input signal is above a threshold (according to the speaker

amplification value), the limiter 35 reduces the input received signal and also reduces the amplitude of the echo canceling signal (the limiter and volume control are located before the input to the coefficient circuit 33).

As per **claim 3,** claim rejected for the same reasons as the rejection of claim 16.

As per **claim 4,** the filter coefficients in Umemoto's device change stage by stage in the case where speaker amplification is larger than a threshold (Col 2 lines 35-55). The coefficients will change as per the amplified signal from volume unit 36 (Fig. 2) and will then be limited by limiter 35 and will correspond to a set amplitude value.

As per **claim 7,** claim rejected for the same reasons as the rejection of claim 16.

As per **claim 9,** in the Umemoto's device the pseudo echo signal is attenuated by a set value (set by limiter 35 in Fig. 2) when the speaker amplification value is larger than the limiter threshold.

As per **claim 10,** the pseudo echo is calculated by the filter coefficients both before and after the limiter threshold is crossed. Once the speaker amplification signal becomes larger than a certain value (such that the limiter threshold is reached), then the coefficients calculated at the moment before the limiter threshold is reached will be used for all periods of time where the speaker amplification signal is larger than the limiter threshold.

As per **claim 14,** claim rejected for same reasons as rejection of claim16.

As per **claim 15,** Umemoto's device comprises a dsp (Col 5 lines 25-30).

As per **claims 17,18,22,26,** claims rejected for the same reasons as the rejection of claim 16. Umemoto's disclosed device comprises a processor to perform all the processes as listed in the rejection of claim 16.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 5,6** rejected under 35 U.S.C. 103(a) as being unpatentable over Umemoto et al. (5636323) as applied to claims 1,3 above, and further in view of Lassaux et al. (4679230).

As per **claims 5,6,** Umemoto discloses applicant's claims 1 and 3 but does not disclose the filter coefficients being set to zero when the speaker amplification is larger than a threshold.

Lassaux discloses an echo cancellation system in a telephone that resets the filter coefficients to zero whenever a possible divergence of the echo estimate is detected (Col 9 lines 40-55). He further discloses that this divergence may be caused by a sudden change in the echo path. If the degree of change of speaker amplification (or the degree of change over time) is above a threshold then a sudden change in the echo path will occur and a divergence may be caused in the echo canceller filter. It would have been obvious to one of ordinary skill in the art at the time of this application to change the filter coefficients to zero if a possible divergence of the echo canceller is detected (such

as due to a sudden change in the amplification of the speaker signal) for the purpose of allowing the echo canceller to converge to the correct set of coefficients in an accelerated mode.

6. **Claims 11,12,24,25** rejected under 35 U.S.C. 103(a) as being unpatentable over Umemoto et al. (5636323) as applied to claims 1 above, and further in view of Sih (5732134).

As per **claim 11,** Umemoto discloses claim 1 and echo canceling means as per the rejection of claim 16. However, Umemoto does not disclose implementing a double talk detector based upon the speaker amplification value in order to halt or restart the renewal of filter coefficients.

Sih discloses a double talk detector for an echo canceller based upon the spectral content of the near and far end signals that is able to inhibit filter adaptation during periods of doubletalk (ABSTRACT). Sih teaches that the detector is needed to prevent corruption of the acoustic echo path (Col 1 lines 43-65). Since the detector checks the spectral content, and the speaker amplification value affects the far-end signal's spectral content in relation to the near-end signals, then the double-talk detection is based upon the speaker amplification value. It would have been obvious to one of ordinary skill in the art at the time of this application to implement double talk detection for the advantage of preventing the corruption of the echo path estimate in the filter.

As per **claim 12,** claim rejected for same reasons as rejection of claim 11. Furthermore, Sih discloses a suppression element 50 in Fig. 2 (echo suppressor) to

suppress any residual echo (Col 3 lines 40-55). The suppressor operates at an attenuation value (either active or curtailed) that is dependant upon the double-talk detection.

As per **claim 24,25,** claims rejected for same reasons as rejection of claim 12. The devices described in the claim 12 rejection would perform the processes of claims 24 and 25.

Response to Arguments

7. Applicant's arguments with respect to claims 1 and 16 have been considered but are moot in view of the new ground(s) of rejection. The examiner has taken a different view of the 'output amplifier' (described above) than in the applicant's arguments.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 703-305-3433. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 703-305-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9315 for After Final communications.

AJ
March 23, 2005

CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
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